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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LAMBRECHT, CHRISTOPHER M	
ART UNIT	**PAPER NUMBER**
2623	

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/826,189	DOLGONOS ET AL.
	Examiner	Art Unit
	Christopher M. Lambrecht	2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6-10,13,14,16-21,23 and 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6-10,13,14,16-21,23 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/19/2005*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed December 19, 2005 have been fully considered but they are not persuasive.

Regarding claim 1, Applicant refers to a portion of the Bishop reference teaching that the "frequencies for the upstream wireless radio frequency carrier . . . preferably follow a wireless communications protocol that is IEEE 802.11 compliant"; or "[a]lternatively, a HiperLAN2 compliant process is appropriate." Col.12 ll.55-64. Applicant asserts that these protocols "do not employ OFDM or multicast arrangements in which the same signal is broadcast simultaneously at the same frequency into overlapping coverage areas." (Arguments at 9.) Applicant however offers no evidence supporting this conclusion. Furthermore, the preferred embodiments of the wireless link are not limited to a specific modulation scheme:

> The wireless link modulation and demodulation process can employ a direct sequence spread spectrum process ("DSSS"), a frequency hopping spread spectrum process ("FSSS"), or a vector modulation process. The vector modulation processes preferably employ a quadrature phase shift keying process, but a bi-phase shift keying process, or any other modulation and demodulation process that is consistent with digital modulation techniques will work.

Bishop, col.12 l.66-col.12 l.7.

Applicant argues on page 10 that Bishop fails to suggest "any shortcomings" in these networking standards that would motivate a skilled artisan to consider "an OFDM based protocol[.]" Initially, the examiner notes that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). And contrary to Applicant's assertion, Bishop expressly discloses

that the wireless link of the preferred embodiment is susceptible to degradation caused by obstructions. Col.8 ll.15-18, col.23 ll.18-22. As taught by Flint, OFDM (specifically, coded OFDM) is preferred over other modulation schemes in wireless applications, "to combat difficult conditions such as multipath." Flint, sec. 2.2 at 150-51. Such multipath conditions, as is known in the art, are caused by signal reflections from obstructions (e.g., man-made structures) and are a source of signal degradation.[1] Thus, given the teachings of the Bishop and Flint references, a person having ordinary skill in the art would have recognized the following:

- Bishop's wireless link is not restricted to a particular modulation scheme.
- Wireless links can be implemented using OFDM modulation.
- OFDM modulation can reduce signal degradation caused by obstructions.
- Bishop's system suffers from signal degradation caused by transient obstructions.

These facts provide a motivation to implement the wireless link of Bishop using OFDM and thus an OFDM modulator.

Applicant additionally argues on page 10 that "according to the preferred and alternative protocols disclosed in Bishop, adjacent network access devices having overlapping coverage areas specifically do not transmit simultaneously the same frequency at the same time, but rather hand off the downstream transmission from one network device to the other . . . ." The rejection does not rely on Bishop to teach the limitation of "at least some of the antennae nodes are configured to transmit the same signals at the same time on the same frequency in overlapping coverage areas." Further, the fact that the network access interface devices of Bishop may "hand off" a downstream transmission from one device to another does not preclude these devices from

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[1] *See* IEEE, The Authoritative Dictionary of IEEE Standards Terms 714 (IEEE Press, 7th ed. 2000).

being configured to transmit the same signals at the same time on the same frequencies in overlapping coverage areas.

Additionally on page 10 of the arguments, Applicant asserts that Flint "does not even remotely suggest that a cable plant could be used to distribute a signal to a plurality of OFDM enabled antenna nodes." The examiner notes, however, that figure 3 of Flint illustrates a "cable network" feeding a wireless "Macrocell" base station. As described throughout the reference, the base stations employ OFDM and a typical system comprises multiple Macrocells with respective base stations.

Applicant further asserts that Flint teaches away from "a distributed system" comprising "a plurality of antenna nodes each having individual orthogonal frequency division multiplexers" (Arguments at 10). Indeed, Flint teaches that "the cost effective way to implement the portable mode is to use a central COFDM system . . . ." However, the centralized COFDM system described in Flint does not teach away from a plurality of antenna nodes each having individual orthogonal frequency division multiplexers. Specifically, Flint's approach is centralized with respect to a Macrocell and, as such, each Macrocell base station is in fact equipped with a respective COFDM modulator (see fig. 2). Because the system comprises multiple Macrocells (see sec. 1.1 at 149), Flint therefore describes, rather than teaches away from, a system comprising a plurality of antenna nodes each having individual orthogonal frequency division multiplexers. Furthermore, the advantages of OFDM taught by Flint and discussed above apply specifically to wireless transmission. And the system described in Flint employs an OFDM modulator at, and not before, each point in the distribution path where the signal is first transmitted wirelessly. These points correspond with the locations of the network access

interface devices in Bishop. Thus, even in view of the centralized COFDM approach described in Flint, one of ordinary skill in the art would still have been motivated to employ an individual OFDM modulator at each of the plurality of network access interface device (i.e., antennae nodes) of Bishop.

Regarding Applicant's arguments against the Chambers reference (see Arguments at 10), the examiner notes that Chambers describes OFDM as a "logical and favorable" technique, "especially . . . for the emerging wireless local loop equipment that is fixed vs. mobile." Col.4 ll.38-47. Furthermore, the "perceived shortcomings" of Chambers addressed by Bishop would not have lead one or ordinary skill in the art away from configuring antenna nodes of Bishop to transmit the same signals at the same time on the same frequencies, as relied upon in the rejection. Bishop seeks, among other things, to reduce the accumulation of ingress noise in the return path of a CATV network. Col. 2 ll.26-51. Bishop notes that subscriber premises equipment, for various reasons, is a source of such noise. Col.2 ll.13-20. Chambers employs a wireless local loop that, according to Bishop, "succeeds in isolating the subscriber premises from the bi-directional fiber network, but does not remove the noise injected into the upstream signal." Col.3 ll.3-5. To overcome this deficiency, Bishop uses a digital upstream path in the local loop. Upstream signals in the wireless local loop are demodulated, reconstructed, and then re-modulated to remove noise before being presented to the cable plant. In this way, noise is prevented from accumulating in the return path of the cable plant. *See* Bishop, col.5 l.63-col.6 l.15. Bishop's upstream solution does not teach away from the downstream transmission arrangement of Chambers.

For the reasons discussed above, the examiner submits that claim 1 is obvious within the meaning of 35 U.S.C. 103(a).

Applicant submits that independent claims 10, 14, and 19 are allowable for the same reasons as claim 1. The examiner submits that the issues raised with respect to claim 1 have been alleviated and thus claims 10, 14, and 19 are also unpatentable over the cited references.

2. Applicant's failure to adequately traverse facts Officially noticed in the prior Office action is treated as an admission of the facts so noticed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 4, 6-8, 10, 13, 14, 16-21, 23, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bishop in view of Flint and Chambers, all of record.

Regarding claim 1, Bishop discloses a communication system (fig. 1) for providing wireless Internet signals (see col. 8, l. 66 - col. 9, l. 1 and col. 2, ll. 1-8) to a group of mobile subscribers (col. 9, ll. 4-14), comprising:

- a distribution hub [21] (fig. 1) for receiving Internet signals for a plurality of subscribers from the Internet (col. 7, ll. 55-60), and a plurality of video signals from a source (col. 6, ll. 29-34), and transmitting the Internet and video signals over a wired cable TV plant [2] (fig. 1, col. 8, ll. 32-37);

a plurality of antenna nodes [6] (fig. 1) coupled to the distribution hub [21] by the cable plant [2] (fig. 1), each of the antenna nodes [6] including a cable plant interface [714] adapted to receive the Internet signals via the cable plant [2] (fig. 7, col. 15, ll. 9-13), and a multi-carrier modulator [742] (fig. 7) adapted to modulate the Internet signals onto multiple carriers for wireless transmission to the plurality of subscribers (col. 16, ll. 11-19).

Bishop fails to disclose that the multi-carrier modulator includes an orthogonal frequency division multiplexer, the multi-carrier modulated Internet signals being orthogonal frequency division multiplexed (OFDM) signals, and at least some of the antenna nodes [6] are configured to transmit the same signals (e.g., the OFDM signals) at the same time on the same frequencies in overlapping coverage areas. Flint, however, discloses a communications system comprising an orthogonal frequency division multiplexer for orthogonal frequency division multiplexing Internet signals, for the purpose of combating difficult conditions such as multipath (p. 151, left column, ¶1). And Chambers discloses a communications system wherein some antenna nodes are configured to transmit the same signals at the same time on the same frequencies in overlapping coverage areas (col. 7, ll. 28-38), for the purpose of canceling out interference (col. 7, ll. 30-35). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Bishop to include an orthogonal frequency division multiplexer, the multi-carrier modulated Internet signals being orthogonal frequency division multiplexed (OFDM) signals as taught by Flint for the purpose of combating difficult conditions such as multipath; and further modify the system of Bishop and Flint to include at least some of the antenna nodes are configured to transmit the same signals at the same time on the same

frequencies in overlapping coverage areas as taught by Chambers for the purpose of canceling out interference.

As to claim 3, Bishop, Flint, and Chambers together disclose a communications system according to claim 1 wherein the Internet signals transmitted over the wired cable plant [2] are QAM modulated signals placed on RF carrier frequencies falling substantially with the 50-750 MHz range (Bishop, col. 15, ll. 9-13).

As to claim 4, Bishop, Flint, and Chambers together disclose a communication system according to claim 3. In addition, Bishop discloses that the Internet signals transmitted over the wired cable plant [2] are QAM modulated signals placed on RF carrier frequencies falling substantially with the 50-750 MHz range (Bishop, col. 15, ll. 9-13). Chambers further discloses wherein OFDM symbols (col. 4, ll. 37-43) are modulated onto RF carrier frequencies falling substantially within the 2500 - 2700 MHz range (col. 2, l. 59 - col. 3, l. 9) for the purpose of maximizing flexibility, robustness, and reliability of the system (col. 3, ll. 3-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the system of Bishop, Flint, and Chambers to include the OFDM symbols are modulated onto RF carrier frequencies falling substantially within the 2500 - 2700 MHz range as further taught by Chambers for the purpose of maximizing flexibility, robustness, and reliability of the system.

As to claim 6, Bishop, Flint, and Chambers together discloses a communications system according to claim 1. Bishop further discloses wherein the antenna nodes [6] are configured to receive wireless signals from a plurality of subscribers (col. 9, ll. 52-60) and relay the subscriber signals over the cable plant [2] to the distribution hub [21], the distribution hub [21] being

configured to receive the subscriber signals from the cable plant [2] and transmit them to the Internet (col. 13, ll. 54-57, col. 14, ll. 7-16, and col. 14, ll. 19-26).

As to claim 7, Bishop, Flint, and Chambers together discloses a communications system according to claim 1. Bishop further discloses a communication system according to claim 1 wherein the wired cable plant [2] includes a coaxial portion (col. 8, ll. 33-37).

As to claim 8, Bishop, Flint, and Chambers together discloses a communications system according to claim 1. Bishop further discloses a communication system according to claim 7 wherein the antenna nodes [6] are connected to the coaxial portion (col. 8, ll. 37-41).

As to claim 9, Bishop discloses a communication system according to claim 1 including a plurality of cable plant to wireless transverters [6] coupled to the distribution hub [21] by the cable plant [2], each of the wireless transverters being configured to receive video signals from the cable plant [2] (col. 15, ll. 9-13) and convert the received video signals into multi-carrier modulated signals (col. 16, ll. 11-19) for wireless transmission to subscribers (col. 19, ll. 1-14).

Regarding claim 10, Bishop discloses a communication system for broadcasting television signals to a group of mobile subscribers (col. 9, ll. 1-14), comprising:

- a distribution hub [21] (fig. 1) configured to receive television signals from a network and transmit the subscriber signals over a cable plant [2] (fig. 1, col. 8, ll. 33-41);
- a cable plant [2] connected to the distribution hub [21] for transmitting the television signals from the distribution hub [21] to a plurality of remote locations (col. 9, ll. 1-14), the cable plant [2] including at least one coaxial cable network (col. 8, ll. 33-37); a plurality of cable/wireless television transverters [6] (fig. 1) connected at remote locations (see fig. 1) to the coaxial cable network (col. 8, ll. 37-41), the transverters

[6] being configured to receive television signals transmitted over the cable plant [2] from the distribution hub [21] (col. 15, ll. 9-13), convert the television signals into a format suitable for wireless transmission (col. 16, ll. 5-8), and transmit the converted television signals over the wireless paths to a plurality of mobile subscriber units [1,71] (fig. 1, col. 9, ll. 5-14); and

- a plurality of mobile subscriber units [1,71] configured to receive the converted television signals (col. 9, ll. 5-14).

Bishop fails to disclose the converted television signals include OFDM television signals. Flint, however, discloses a communications system wherein converted television signals include OFDM television signals, for the purpose of combating difficult conditions such as multipath (p. 151, left column, ¶1). And Chambers discloses a communications system wherein some antenna nodes are configured to transmit the same signals at the same time on the same frequencies in overlapping coverage areas (col. 7, ll. 28-38), for the purpose of canceling out interference (col. 7, ll. 30-35). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Bishop to include an orthogonal frequency division multiplexer, the multi-carrier modulated Internet signals being orthogonal frequency division multiplexed (OFDM) signals as taught by Flint for the purpose of combating difficult conditions such as multipath; and further modify the system of Bishop and Flint to include at least some of the antenna nodes are configured to transmit the same signals at the same time on the same frequencies in overlapping coverage areas as taught by Chambers for the purpose of canceling out interference.

Regarding claim 13, Bishop, Flint, and Chambers together discloses a communications system according to claim 10, but fail to disclose the converted television signals include 8-VSB television signals. However, Official notice is taken of the fact that it was well known in the art at the time of Applicant's invention to employ 8-VSB modulated television signals for the purpose of maintaining compatibility with ATSC standards. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Bishop, Flint, and Chambers to include 8-VSB television signals for the purpose of maintaining compatibility with ATSC standards.

Regarding claim 14, Bishop discloses a communications system for providing wireless signals from a wide area network (Internet, see col. 8, l. 66 - col. 9, l. 1 and col. 2, ll. 1-8) to a group of mobile subscribers (col. 9, ll. 4-14), comprising:

(a) a distribution hub (splitter illustrated in fig. 1 coupling subscriber tap 67 to headend 21) for (i) receiving, from the wide area network, downstream IP signals (col. 15, ll. 45-48) for a plurality of mobile subscriber units [1,71] (fig. 1) located within a service area and broadcasting the downstream IP signals in a downstream channel over a wired cable TV plant [2] (fig. 1, col. 15, ll. 9-13), and (ii) receiving over the wired cable TV plant [2], from a plurality of antenna nodes, upstream IP signals and routing the upstream IP signals to the wide area network (col. 14, ll. 8-26);

(b) a plurality of antenna nodes [6] (fig. 1) located in the service area and coupled to the distribution hub by the cable plant [2] for (i) receiving the downstream IP signals from the wired cable TV plant [2] (col. 15, ll. 9-13), converting the downstream IP signals into a format suitable for wireless transmission (col. 16, ll. 5-19) and transmitting

the converted downstream IP signals over-the-air to the mobile subscriber units [1,71] (col. 16, ll. 24-27), and (ii) receiving upstream IP signals over-the-air from the mobile subscriber units [1,71] (col. 13, ll. 8-31), converting the upstream IP signals into a format suitable for transmission over the cable TV plant [2] (col. 14, ll. 10-16) and transmitting the upstream IP signals over the cable TV plant [2] to the distribution hub (col. 14, ll. 19-26) where signals destined for headend 21 from nodes 6 are inherently transmitted to the distribution hub); and

(c) a plurality of mobile subscriber units [1,71] each having a wireless receiver [804] (fig. 8) for receiving over-the-air downstream IP signals transmitted from the antenna nodes [6] (col. 17, ll. 47-54) and a wireless transmitter [844] (fig. 8) for transmitting upstream IP signals to the antenna nodes [6] (col. 19, ll. 5-18).

Bishop is silent with respect to at least some of the antenna nodes [6] acting in a simulcast manner and that the converted downstream IP signals are OFDM signals. Chambers, however, discloses a communications system wherein at least some of the antenna nodes act in a simulcast manner (col. 7, ll. 28-38), for the purpose of canceling out interference (col. 7, ll. 30-35). And Flint discloses a communications system wherein converted downstream IP signals include OFDM television signals, for the purpose of combating difficult conditions such as multipath (p. 151, left column, ¶1). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Bishop to include at least some of the antenna nodes acting in a simulcast manner as taught by Chambers for the purpose of canceling out interference; and further to modify the system of Bishop and Chambers to include the

converted downstream IP signals include OFDM television signals as taught by Flint for the purpose of combating difficult conditions such as multipath.

As to claim 16, Bishop, Chambers, and Flint together disclose the communications system of claim 14 wherein the downstream IP signals broadcast over the cable TV plant are QAM modulated signals placed on an RF carrier frequency falling substantially within the 2500-2700 MHz range (Chambers, col. 4, table 1).

As to claim 17, Bishop, Chambers, and Flint together disclose the communications system of claim 14 wherein the cable TV plant [2] includes a coaxial portion to which at least some of the antenna nodes [6] are connected (Bishop, col. 8, ll. 37-41).

Regarding claim 18, Bishop, Chambers, and Flint together disclose the communications system of claim 14 including a distribution hub (splitter), having associated therewith a service area and a plurality of antenna nodes for transmitting downstream IP signals to and receiving upstream IP signals from mobile subscriber units located within the service area (see rejection of claim 14), the communication system further including a headend [21] (Bishop, fig. 1) coupled to said distribution hub for routing downstream IP signals from the wide area network to the distribution hub (Bishop col. 14, ll. 7-26, where signals transmitted from headend 21 destined for nodes 6 are inherently transmitted to the distribution hub), the headend including a router and a network management system (Bishop, col. 14, ll. 19-26) configured to receive information from the distribution hubs about the location of mobile subscriber units (i.e., IP address data) and to route downstream IP signals addressed to a particular mobile subscriber unit to the distribution hub associated with the service area in which the particular mobile subscriber unit is located (Bishop, col. 14, ll. 19-26). Bishop, Chambers, and Flint are silent with respect to a plurality of

distribution hubs. However, Official notice is taken of the fact that it was well known in the art at the time the invention was made for a cable TV plant to include a plurality of distribution hubs associated with various service areas and to route IP packets from a headend to a particular distribution hub based on location information of a subscriber unit, for the purpose of supporting a broader service area. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Bishop, Chambers, and Flint to include a plurality of distribution hubs, for the purpose of supporting a broader service area.

Regarding claim 19, Bishop discloses a method for providing wireless communications signals to a group of mobile units [1,71] (fig. 1, see col. 8, l. 66 - col. 9, l. 1 and col. 2, ll. 1-8), comprising:

(a) providing downstream communications signals for a plurality of mobile subscribers units [1,71] to a distribution hub [21] (fig. 1, col. 7, ll. 55-60 and col. 8, ll. 32-37);

(b) formatting the communication signals into a transmission format suitable for transmission over a wired cable television network [2] (fig. 1, where the network provides internet access, col. 2, ll. 1-7, provided by headend 21 via cable plant 2, the signals are inherently formatted in a format suitable for transmission over a wired cable television network) and transmitting the formatted communication signals over the cable television network [2] to a plurality of antenna nodes [6] (fig. 1) connected throughout the wired cable television network [2] (col. 9, ll. 4-14);

(c) at the antenna nodes [6], converting the formatted communication signals into multi-carrier modulated signals (col. 16, ll. 5-19) and transmitting the multi-carrier

modulated signals over-the-air to the plurality of subscriber units [1,71] (col. 16, ll. 24-27).

Bishop fails to disclose that the multi-carrier modulator includes an orthogonal frequency division multiplexer, the multi-carrier modulated Internet signals being orthogonal frequency division multiplexed (OFDM) signals, and at least some of the antenna nodes [6] are configured to transmit the same signals (e.g., the OFDM signals) at the same time on the same frequencies in overlapping coverage areas. Flint, however, discloses a communications system comprising an orthogonal frequency division multiplexer for orthogonal frequency division multiplexing communication signals, for the purpose of combating difficult conditions such as multipath (p. 151, left column, ¶1). And Chambers discloses a communications system wherein some antenna nodes are configured to transmit the same signals at the same time on the same frequencies in overlapping coverage areas (col. 7, ll. 28-38), for the purpose of canceling out interference (col. 7, ll. 30-35). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Bishop to include an orthogonal frequency division multiplexer, the multi-carrier modulated communications signals being orthogonal frequency division multiplexed (OFDM) signals as taught by Flint for the purpose of combating difficult conditions such as multipath; and further modify the system of Bishop and Flint to include at least some of the antenna nodes are configured to transmit the same signals at the same time on the same frequencies in overlapping coverage areas as taught by Chambers for the purpose of canceling out interference.

As to claim 20, Bishop, Flint, and Chambers together disclose the method of claim 19. Bishop further discloses: the provided communications signals include Internet signals addressed

to at least some of the subscriber units; and (d) at each subscriber unit [1,71], demodulating the multi-carrier modulated signals (col. 17, ll. 58-66) and outputting the Internet signals addressed to that subscriber unit (col. 18, ll. 38-42).

As to claim 21, Bishop, Flint, and Chambers together disclose the method of claim 20. Bishop further discloses including transmitting the uplink Internet signals from the subscriber units [1,71] to the distribution hub [21] for routing to the Internet (col. 14, ll. 7-16).

As to claim 23, Bishop, Flint, and Chambers together disclose the method of claim 19. In addition, Bishop discloses that the communication signals transmitted over the wired cable plant [2] are QAM modulated signals placed on RF carrier frequencies falling substantially with the 50-750 MHz range (Bishop, col. 15, ll. 9-13). Chambers further discloses wherein OFDM symbols (col. 4, ll. 37-43) are modulated onto RF carrier frequencies falling substantially within the 2500 - 2700 MHz range (col. 2, l. 59 - col. 3, l. 9) for the purpose of maximizing flexibility, robustness, and reliability of the system (col. 3, ll. 3-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the system of Bishop, Flint, and Chambers to include the OFDM symbols are modulated onto RF carrier frequencies falling substantially within the 2500 - 2700 MHz range as further taught by Chambers for the purpose of maximizing flexibility, robustness, and reliability of the system.

As to claim 25, Bishop, Flint, and Chambers together disclose the method of claim 19. Bishop further discloses that the provided communication signals are television signals (col.9 ll.1-18).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Lambrecht whose telephone number is (571) 272-7297. The examiner can normally be reached on M-F, 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on M-F at (571) 272-7353. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher M. Lambrecht
Examiner
Art Unit 2623

cml

JOHN MILLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600